Zhihan JIANG

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Research Interests

Data Analytics & Visualization, Ubiquitous Computing, Mobile Computing.

Education

Ph.D.	Department of Electrical and Electronic Engineering, **The University of Hong Kong** Supervisor: Edith C.H. NGAI	2021–Present
M.E.	Department of Computer Science and Technology, **Xiamen University** Supervisor: Longbiao CHEN	2018–2021
B.E.	Department of Computer Science and Technology, **Xiamen University**	2014–2018

Publications

1. *[IoTJ'23]* **Zhihan Jiang**, Vera van Zoest, Weipeng Deng, Edith C.H. Ngai, Jiangchuan Liu. Leveraging Machine Learning for Disease Diagnoses based on Wearable Devices: A Survey. IEEE Internet of Things Journal, 2023.
2. *[VIS'23]* **Zhihan Jiang**, Handi Chen, Rui Zhou, Jing Deng, Xinchen Zhang, Running Zhao, Cong Xie, Yifang Wang, Edith C.H. Ngai. HealthPrism: A Visual Analytics System for Exploring Children's Physical and Mental Health Profiles with Multimodal Data. *IEEE Transactions on Visualization and Computer Graphics,* IEEE VIS 2023.
3. *[ICASSPW'23]* **Zhihan Jiang**, Cong Xie, Edith C.H. Ngai. A Health Profiling Framework for Children Leveraging Multimodal Learning Based on Ambient Sensor Signals. 2023 IEEE International Conference on Acoustics, Speech, and Signal Processing Workshops, 2023.
4. *[UbiComp'23]* **Zhihan Jiang**, Lin Lin, Xinchen Zhang, Jianduo Luan, Running Zhao, Longbiao Chen, James Lam, Ka Man Yip, Hung Kwan So, Wilfred HS Wong, Patrick Ip, Edith C.H. Ngai. A Data-Driven Context-Aware Health Inference System for Children during School Closures. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2023.
5. *[TITS'22]* **Zhihan Jiang**, Xin He, Chenhui Lu, Binbin Zhou, Xiaoliang Fan, Cheng Wang, Xiaojuan Ma, Edith C.H. Ngai, Longbiao Chen. Understanding Drivers' Visual and Comprehension Loads in Traffic Violation Hotspots Leveraging Crowd-Based Driving Simulation. *IEEE Transactions on Intelligent Transportation Systems*, 2022.
6. *[Healthcare'22]* **Zhihan Jiang***, Ka-Man Yip*, Xinchen Zhang, Jing Deng, Wilfred Wong, Hung-Kwan So, Edith C. H. Ngai. Identifying the High-Risk Population for COVID-19 Transmission in Hong Kong Leveraging Explainable Machine Learning. *Healthcare*, 2022. (* indicates equal contribution)
7. *[TMC'21]* **Zhihan Jiang**, Hang Zhu, Binbin Zhou, Chenhui Lu, Mingfei Sun, Xiaojuan Ma, Xiaoliang Fan, Cheng Wang, Longbiao Chen. CrowdPatrol: A Mobile Crowdsensing Framework for Traffic Violation Hotspot Patrolling. *IEEE Transactions on Mobile Computing*, 2021.
8. *[ISJ'20]* **Zhihan Jiang**, Longbiao Chen, Binbin Zhou, Jinchun Huang, Tianqi Xie, Xiaoliang Fan, Cheng Wang. iTV: Inferring Traffic Violation-Prone Locations with Vehicle Trajectories and Road Environment Data. *IEEE Systems Journal*, 2020.
9. *[FCS'20]* **Zhihan Jiang**, Yan Liu, Xiaoliang Fan, Cheng Wang, Jonathan Li, Longbiao Chen. Understanding Urban Structures and Crowd Dynamics Leveraging Large-Scale Vehicle Mobility Data. *Frontiers of Computer Science*, 2020.
10. *[TCNS'23]* Lin Lin, **Zhihan Jiang**, Hong Lin, Edith C.H. Ngai, James Lam. On Quotients of Stochastic Networks over Finite Fields. *IEEE Transactions on Control of Network Systems*, 2023.
11. *[CHI'22]* Chuhan Shi, **Zhihan Jiang**, Xiaojuan Ma, Qiong Luo. A Personalized Visual Aid for Selections of Appearance Building Products with Long-term Effects. *Proc. of the ACM Conference on Human Factors in Computing Systems*, 2022.
12. *[JNCA'21]* Longbiao Chen, **Zhihan Jiang**, Dingqi Yang, Thi-Mai-Trang Nguyen, Cheng Wang. Fog Radio Access Network Optimization for 5G Leveraging User Mobility and Traffic Data. *Journal of Network and Computer Applications*, 2021.

13. *[UIC'19]* Ruiying Guo, **Zhihan Jiang**, Jingchun Huang, Jianrong Tao, Cheng Wang, Jonathan Li, Longbiao Chen. BikeNet: Accurate Bike Demand Prediction Using Graph Neural Networks for Station Rebalancing. *The 16th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2019.
14. *[EWSN'19]* Longbiao Chen, **Zhihan Jiang**, Jiangtao Wang, Yasha Wang. Data-Driven Bike Sharing System Optimization: State of the Art and Future Opportunities. *The 2019 International Conference on Embedded Wireless Systems and Networks*, 2019.
15. *[INFOCOM'24]* Xinchen Zhang, Running Zhao, **Zhihan Jiang**, Zhicong Sun, Yulong Ding, Edith C.H. Ngai and Shuanghua Yang. AOC-IDS: Autonomous Online Framework with Contrastive Learning for Intrusion Detection. *The 2024 IEEE International Conference on Computer Communications*, 2024. (accepted)
16. *[ICLR'24]* Yun-Hin Chan, Rui Zhou, Running Zhao, **Zhihan Jiang**, Edith C.H. Ngai. Internal Cross-layer Gradients for Extending Homogeneity to Heterogeneity in Federated Learning. The 12th International Conference on Learning Representations, 2024. (accepted)
17. *[UIC'22]* Jiannan Gao, Yigao Wang, **Zhihan Jiang**, Hang Zhu, Qiyue Zhong, Xiaoliang Fan, Longbiao Chen, Cheng Wang. iTA: Inferring Traffic Accident Hotspots with Vehicle Trajectories and Road Environment Data. *The 19th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2022.
18. *[TMC'22]* Hang Zhu, Tieqi Shou, Ruiying Guo, **Zhihan Jiang**, Zeyu Wang, Zhiyuan Wang, Zhiyong Yu, Weijie Zhang, Cheng Wang, Longbiao Chen. RedPacketBike: A Graph-Based Demand Modeling and Crowd-Driven Station Rebalancing Framework for Bike Sharing Systems. *IEEE Transactions on Mobile Computing*, 2022.
19. *[UbiComp'21]* Longbiao Chen, Chenhui Lu, Fangxu Yuan, **Zhihan Jiang**, Leye Wang, Daqing Zhang, Ruixiang Luo, Xiaoliang Fan, Cheng Wang. UVLens: Urban Village Boundary Identification and Population Estimation Leveraging Open Government Data. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2021.
20. *[UIC'21]* Xin He, Hong Hong, Yanwen Liu, Xiaojuan Ma, **Zhihan Jiang**, Longbiao Chen, Ming Cheng, Cheng Wang, Yongchuan Li. CovidPass: A Contactless Check-in System for Keeping Social Distance in Public Health Crisis. *The 18th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2021.
21. *[UbiComp'23]* Tieqi Shou, Zhuohan Ye, Yayao Hong, Zhiyuan Wang, Hang Zhu, **Zhihan Jiang**, Dingqi Yang, Binbin Zhou, Cheng Wang, Longbiao Chen. CrowdQ: Predicting the Queue State of Hospital Emergency Department Using Crowdsensing Mobility Data-Driven Models. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2023.

Patents

1. Longbiao Chen, **Zhihan Jiang**, Xiaoliang Fan, Cheng Wang, Hong Hong. A Method, System, and Readable Storage Medium for Patrol Route Planning Based on Traffic Violation Hotspot Prediction. CN112016735A.
2. Longbiao Chen, **Zhihan Jiang**, Cheng Wang. A Method and System for Traffic Violation Identification Based on Traffic Data and Street View Data. CN111259767A.
3. Longbiao Chen, Ruiying Guo, **Zhihan Jiang**, Zhiyuan Wang, Cheng Wang. A Method for Bike Demand Prediction and Scheduling Based on Deep Learning and Crowd Sensing. CN111915057A.

Visiting Experience

Research Visiting Student

Human-Computer Interaction Group, Hong Kong University of Science and Technology — Jun-Sept, 2020

Advanced Computing and System Laboratory, Zhejiang University — Jan, 2019

Summer School

Ubiquitous Computing and Big Data Summer School, Peking University — Jul, 2018

Teaching Experience

Teaching Assistant at the University of Hong Kong

Computer and Communication Networks — 2021 Fall, 2022 Fall, 2023 Fall

Teaching Assistant at Xiamen University

Software Architecture and Design Patterns — 2019 Spring

Presentations

Conference Talk

"A Visual Analytics System for Exploring Children's Physical and Mental Health Profiles with Multimodal Data"
IEEE VIS 2023, Melbourne, Australia, Oct, 2023

"A Data-Driven Context-Aware Health Inference System for Children during School Closures"
UbiComp/ISWC 2023, Cancún, Mexico, Oct, 2023

Seminar

"Empowering Pervasive Healthcare: Mobile Analytics Systems Leveraging Multimodal Data"
Department of Electrical and Electronic Engineering, The University of Hong Kong, Oct, 2023

Invited Talk

"Interactive Visual Analytics for Healthcare with Multimodal Data"
MARS Group, Xiamen University, Aug, 2023

Poster

"A Health Profiling Framework for Children Leveraging Multimodal Learning Based on Ambient Sensor Signals"
Ambient AI Workshop @ ICASSP2023, Rhodes, Greece, Jun, 2023

"Post-Disaster Traffic Visualization and Analysis based on Large-Scale Vehicle Trajectory Data"
The 14th Joint Conference on Harmonious Human-Machine Environment, Tianjin, China, Sept, 2018

Academic Services

Journal Reviewer

IEEE Transactions on Intelligent Transportation Systems (TITS)
IEEE Transactions on Industrial Informatics (TII)
IEEE Transactions on Computational Social Systems (TCSS)
IEEE Transactions on Mobile Computing (TMC)
Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
IEEE Internet of Things Journal (IoTJ)

Conference Reviewer

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2024
IEEE International Conference on Ubiquitous Intelligence and Computing (UIC), 2020-2022
Chinese Conference on Computer Supported Cooperative Work and Social Computing (ChineseCSCW), 2020
IEEE International Conference on Communications - NGNI Symposium (ICC-NGNI), 2020

Scholarships & Awards

IEEE VIS 2023 Inclusivity and Diversity Scholarship	2023
Outstanding Graduates	2021
National Scholarship	2020
Second Prize in the 14th "Challenge Cup" Provincial Technological Innovation Competition	2019
Outstanding Undergraduate Thesis (grade A)	2018
Academic Innovation Scholarship, Excellent League Member, Second Class Academic Excellence Scholarship	2017
First Prize in Fujian Contest District in China Undergraduate Mathematical Contest in Modeling	2016
First Class Academic Excellence Scholarship (three times)	2015, 2016, 2018

Skills

Programming	Matlab, Python, C/C++, Java, SQL, JavaScript, HTML5, Node.js, PyTorch
English	IELTS: 7.5, GRE: 324 (4)
Mathematical Finance	Minor Degree (The Wang Yanan Institute for Studies in Economics, Xiamen University)